

WILLOW BAY MARINA AND RESORT (PWSNO 1090178) SOURCE WATER ASSESSMENT REPORT

February 20, 2003



State of Idaho Department of Environmental Quality

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SOURCE WATER ASSESSMENT FOR WILLOW BAY MARINA AND RESORT

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your drinking water source is based on well construction characteristics; site specific sensitivity factors associated with the aquifer the water is drawn from; a land use inventory inside the well recharge zone; and water quality history. For non-community transient water systems like Willow Bay Marina and Resort, recharge zones were generally delineated as a 1000-foot fixed radius around the wells.

This report, *Source Water Assessment for Willow Bay Marina and Resort* describes factors used to assess the well's susceptibility to contamination. The analysis relies on information from the well log; an inventory of land use, well site characteristics, potential contaminant sites identified through a Geographic Information System database search; and information from the public water system file. The ground water susceptibility analysis worksheet for Willow Bay Marina and Resort is attached.

Taken into account with local knowledge and concerns, this assessment should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

Well Construction.

Drinking water for Willow Bay Marina and Resort comes from a 651 foot deep well. The water system serves 25 RV spaces and a residence located between Dufort Road and the Pend Oreille River about 8 miles southeast of Priest River, Idaho.

Except for a minor variation in the casing wall thickness, the well meets current Idaho Department of Water Resources standards. The 6-inch steel casing, fitted with a watertight well cap, extends from 20 inches above ground surface to 345 feet below where it terminates in broken rock, gravel and quick sand. The remaining depth of the well is uncased granite with a water-bearing zone between 360 and 590 feet. The 18 - foot deep surface seal extends into a bed of clay mixed with rock and some sand that produces a low volume of water. An 8-inch outer casing and a 100-foot thick clay bed prevent the mixing of water from the shallow and deeper water bearing strata. Static water level in the well is 14 feet below the surface.

The well is above the 100-year flood plain and about 370 feet south of the Pend Oreille River. A site inspection in June 1999 determined that the well is not influenced by surface water. Willow Bay Marina and Resort was mostly in compliance with *Idaho Rules for Public Drinking Water Systems* when it was inspected in June 1999. No serious deficiencies in well head and surface seal maintenance were noted, but the system was instructed to replace the existing well cap with a vented model.

The well produced about 6 gallons per minute when it was tested at the time of drilling in March 1988. The site for a proposed second well for Willow Bay Marina was approved in July 2002.

Well Site Characteristics.

Hydrologic sensitivity scores are derived from information on the well log and from the soil drainage classification inside the recharge zone delineation. Soils in the well recharge zone for The Willow Bay Marina and Resort well are generally moderately drained to well drained. Soils in these drainage classes provide little protection against migration of contaminants toward the well. At the well site, clay and quick sand predominate in the soil column above the main production level. 100 feet of clay, unmixed with other materials, protect the lower water level against vertical transport of contaminants.

Potential Contaminant Inventory.

Land inside the protection zone delineated for Willow Bay Marina and Resort is mostly devoted to recreational use. Potential contaminant sources identified inside the delineation boundaries include the resort septic system and fuel storage tanks. Nitrates and microbial contaminants are associated with septic systems. Petroleum products contain numerous regulated synthetic and volatile organic compounds. Dufort Road was not counted as a potential contaminant source in the susceptibility analysis of your well since it carries only low volume truck traffic. Given the depth of the well and its location above the flood plain, the Pend Oreille River was not counted as a significant potential source of microbial contamination.

Water Quality History.

Willow Bay Marina and Resort had positive total coliform bacteria test results in June, July and August 2002. All of the contaminated samples were drawn from distribution system sites. The public drinking water system file for Willow Bay does not indicate the probable source of contamination. Nitrates were not detected in annual tests conducted in 1998 and 1999. The Maximum Contaminant Level (MCL) for nitrate is 10 mg/l. No data are on file for other years.

Susceptibility to Contamination.

An analysis of the Willow Bay Marina and Resort well, incorporating information from the public water system file and the potential contaminant inventory, ranked the well at low risk relative to inorganic, synthetic and volatile organic chemical contaminants. The well is moderately susceptible to microbial contamination.

Source Water Protection.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Operating and maintaining the well in full compliance with Idaho Rules for Public Drinking Water systems should be the first drinking water protection priority for Willow Bay. The public water system file for the resort notes several instances of failure to monitor as required. It might be helpful to formulate a written testing and maintenance schedule so the operator doesn't overlook important routine tasks during the resort's busy season. A voluntary measure every system should employ is development of an emergency response plan. There is a simple, fill-in-the-blanks form available on the DEQ website to guide systems through the emergency planning process.

The resort should also investigate ground water protection programs like Home*A*Syst or Farm*A*Syst. These programs are designed to help well owners assess everyday activities for their potential impact on drinking water quality. Topics include septic tank management, petroleum product storage, handling and storing lawn and household chemicals and similar activities. Because Willow Bay may not have direct jurisdiction over the entire recharge zone for its well, it will be important to form partnerships with neighboring landowners and public agencies to regulate land uses that can degrade ground water quality. Some of them may not be aware that their property is in a sensitive area where household, agricultural or business practices could have a negative impact on a public water supply. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

Assistance.

Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request help with drinking water protection planning.

Coeur d'Alene Regional DEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

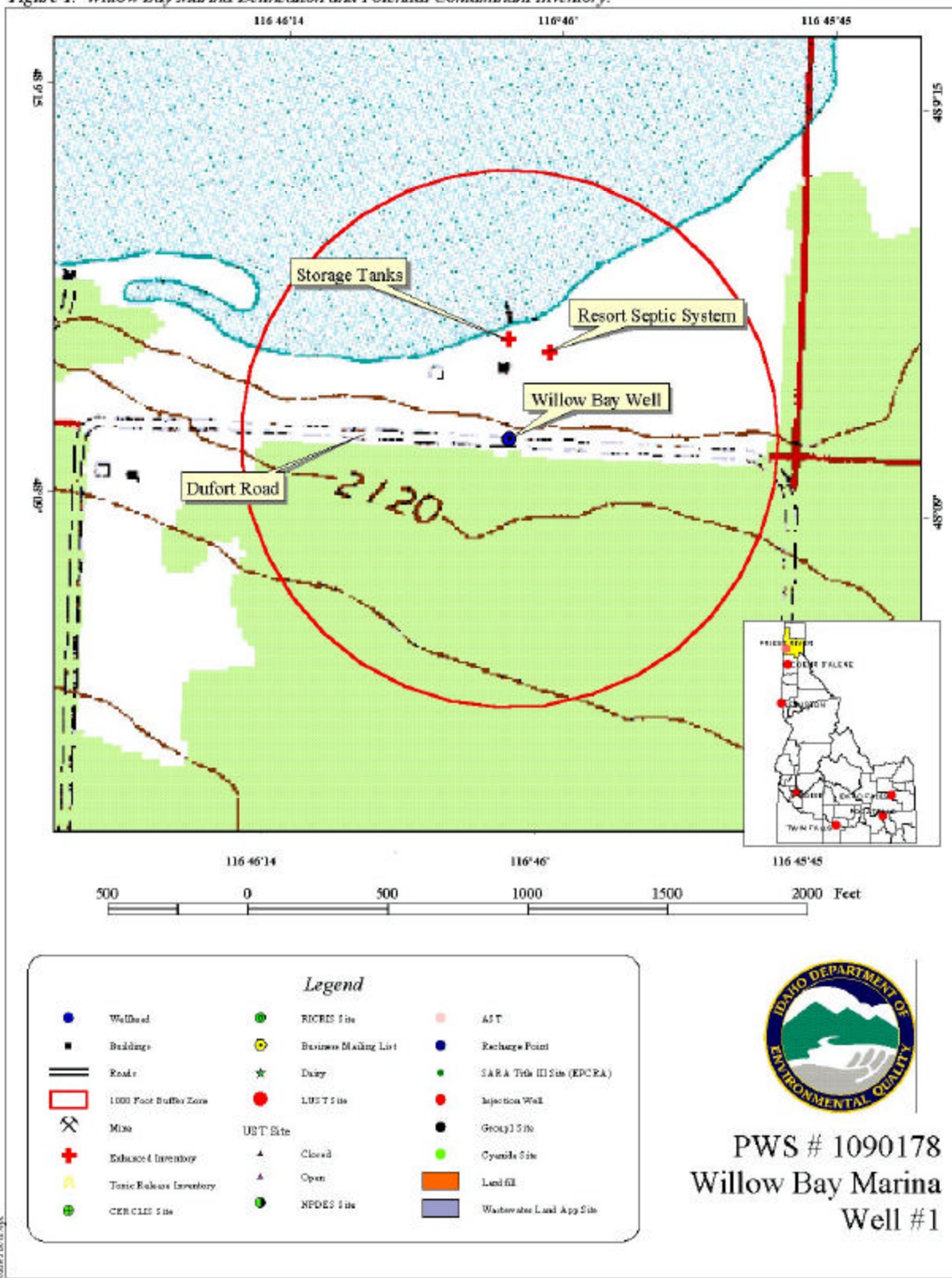
DEQ Website: www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper of the Idaho Rural Water Association (208) 343-7001 for assistance with drinking water protection strategies.

Idaho Rural Water Association Website: www.idahoruralwater.com

Home * A * Syst Website: www.uwex.edu/homeasyst

Figure 1. Willow Bay Marina Delineation and Potential Contaminant Inventory.



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October 15, 2002

Ground Water Susceptibility

Public Water System Name :

WILLOW BAY MARINA AND RESORT

Well # :

WELL #1

Public Water System Number :

1090178

10/15/02 10:33:26 AM

1. System Construction		SCORE			
Drill Date	3/28/88				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 1999				
Well meets IDWR construction standards	YES	0			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	CASING YES, SEAL NO	1			
Highest production 100 feet below static water level	YES	0			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		1			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	YES	0			
Total Hydrologic Score		3			
3. Potential Contaminant / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use	COMMERCIAL/RECREATIONAL	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	NO	NO	NO	NO	NO
Potential Contaminant Source/Land Use Score		2	2	2	2
Potential Contaminant / Land Use - 1000-FOOT RADIUS					
Contaminant sources present (Number of Sources)	YES. Septic System, Fuel Storage	1	1	1	1
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
4 Points Maximum		1	1	1	
1000-foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Agricultural land use 1000-foot Radius	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - 1000-foot Radius		3	3	3	2
Cumulative Potential Contaminant / Land Use Score		5	5	5	4
4. Final Susceptibility Source Score		5	5	5	6
5. Final Well Ranking		Low	Low	Low	Moderate

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Ranking:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ? Superfund? is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.